at Liverpool, under the direction of Captain Denham, R.N.; and twelve months' observations made at Bristol, by Mr. Bunt, by means of his tide-gauge. According to the theory of the tides, the height of the surface of the water at a given place will increase as the sine, while the time increases as the arc. Hence if the time be made the abscissa, and the height the ordinate, the curve representing one tide would be the *figure of signs*. The author on making the comparison of the empirical curve of the rise and fall of the water, deduced from observation, with this theoretical curve, finds a general agreement between them; subject to certain deviations, consisting principally in the empirical curve indicating that both the rise and the fall are not symmetrical, like the theoretical curve, in consequence of the fall being generally more rapid than the rise, and thus occasioning a displacement of the summit of the curve towards that branch of it which corresponds to the fall.

9. Researches in Embryology. Third Series.—Additional Observations. By Martin Barry, M.D., F.R.S.

Having in the paper to which the present is supplementary made known the fact that the germinal spot in the mammiferous ovum resolves itself into cells, with which the germinal vesicle becomes filled, the author has since directed his attention to the corresponding parts in the ova of birds, batrachian reptiles, and osseous fishes, which he finds to be the seat of precisely the same changes. The numerous spots in the germinal vesicle of batrachian reptiles and osseous fishes are no other than the nuclei of cells. The cells themselves, from their transparency, are at first not easily discerned, and appear to have hitherto escaped notice; but after the observer has become aware of their presence, they are, in many instances, seen to be arranged in the same manner, and to present the same interior themselves as the corresponding cells in the ovum of mammalia.

In the representations given by Professor Rudolph Wagner, the discoverer of the germinal spot, the author recognizes evidence of the same changes in ova throughout the animal kingdom. He confirms and explains the observations of R. Wagner, that in the ova of certain animals an originally single spot divides into many, and that in the ova of other animals the number of spots increases as the ovum ripens. But he expresses also the opinion that in all ova there is originally but a single spot, this being the nucleus of the germinal vesicle or cell.

The analogy between the ova of mammalia and the animal abovementioned, extends also to the substance surrounding the germinal vesicle, which consists of nucleated cells.

10. Description of a Calculating Machine invented by Mr. Thomas Fowler, of Torrington in Devonshire. By Augustus De Morgan, Esq. Communicated by F. Baily, Esq., V.P.R.S.

The arithmetical operations performed by the machine are those of multiplication and division; the factors and product in the former case, and the quotient, dividend and divisor in the latter, being